DOCUMENT RESUME

ED 333 684 EC 300 440

AUTHOR	Vanderheiden, G. C.; And Others
TITLE	Trace Authored Papers-AOTA 1989-90.
INSTITUTION	Wisconsin Univ., Madison. Trace Center.
SPONS AGENCY	National Inst. on Disability and Rehabilitation Research (ED/OSERS), Washington, DC.
PUB DATE	90
CONTRACT	G008300045; H133E80021
NOTE	22p.; A product of the Trace Research and Development Center on Communication, Control and Computer Access for Handicapped Individuals.
AVAILABLE FROM	University of Wisconsin, TRACE Research & Development Center, Waisman Center, 1500 Highland Ave., Madison, WI 53705-2280 ($3.80).
PUB TYPE	Collected Works - General (020) -- Reports - Descriptive (141) -- Speeches/Conference Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Communication Aids (for Disabled); Computer Software Development; Databases; *Disabilities; *Evaluation Methods; *Graduate Study; Microcomputers; *Occupational Therapy; *Rehabilitation; Specialization; Staff Role; Technology
IDENTIFIERS	ABLEDATA Database; *Augmentative Communication Systems; University of Wisconsin Madison

ABSTRACT

This document brings together four papers from the American Occupational Therapy Association Forum, authored by individuals affiliated with the Trace R & D Center on Communication, Control and Computer Access for Handicapped Individuals. "The Critical Role of Occupational Therapy in Augmentative Communication Services," by Jenifer Angelo and Roger O. Smith, discusses the role of the occupational therapist in technology application and training of such functions as seating/positioning, mobility, input/control interfaces, output/display interfaces, conversational systems, and writing systems. "Computerizing a System for Integrating and Reporting Functional Assessment" by Roger O. Smith outlines the development of a theory-based functional assessment paradigm and an instrument to advance occupational therapy functional assessment that would allow therapists to collect data using any reliable, valid evaluation. "Technology Specialization for Occupational Therapists: Techspec Education Model," by Robert C. Christiaansen and others, describes a University of Wisconsin-Madison project to provide educational opportunities for occupational therapy students in the area of assistive and rehabilitation technologies. "Hyper-ABLEDATA: An Overview" by Marian Hall and Gregg C. Vanderheiden describes the special features of a microcomputer format of the ABLEDATA database of information on products useful to persons with disabilities. (JDD)

Trace Reprint Series

Trace Authored Papers-AOTA 1989-90

Vanderheiden, G.C., Smith, R.O., Hall. M., Fox, L.B., Christiaansen, R.C., Angelo, J.D.

1990

Papers from the American Occupational Therapy Association Forum

Trace Center

Trace R & D Center
on Communication, Control
and Computer Access
for Handicapped Individuals

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The Critical Role of Occupational Therapy in Augmentative Communication Services

The overall purpose of augmentative communication is for an individual to be able to transmit a message through production-based or selection-based techniques (Fishman, 1987). Professionals involved in the augmentative communication field include speech pathologists, occupational therapists, and physical therapists. In some facilities, a rehabilitation engineer, special education teacher, and social worker may also be involved. This team works together to recommend a communication system for the client and a plan for its implementation.

According to Rodgers (1985), there are 19 phases of augmentative communication services. Generally, these can be summarized into five categories of services, including:
1. Screening
2. Evaluating
3. Selecting/recommending
4. Acquiring the system/setting-up
5. Following up

These five areas of augmentative communication services have another dimension. In order for an augmentative communication system to be truly workable, the five services need to occur in six functional areas. These are:
1. Seating and positioning
2. Mobility

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3. Input/control interfaces
4. Output/display interfaces
5. Conversational systems
6. Writing systems

The result is a 5x6 matrix of augmentative communication clinical functions as illustrated in Figure 1. Figure 1 also highlights what the authors perceive to be the current involvement of occupational therapy in providing these services.

There is a problem, however, in portraying occupational therapy involvement with augmentative communication services in this way. The chart is a bit simplistic. It is rare for an individual requiring an augmentative communication system to be evaluated and for an appropriate communicat on aid to be easily identified. More frequently than not, the ideal augmentative communication system is elusive to even the most expert augmentative communication evaluation team. A primary reason is that at the time of evaluation an individual may be able physically and cognitively to access a certain limited augmentative communication device, while with practice he might be able to access a more powerful communication system. Consequently, a recommendation based only on current abilities can mean seriously underestimating the potential of

Figure 1
Augmentative Communication System Technology Application: Areas of Current OT Involvement

	Screen	Evaluate	Select/ Recommend	Acquire/ Set-up	Follow-up
Seating/Positioning	X	x	x	x	X
Mobility	X	x		x	X
Input/Control Interfaces	X	x			x
Output/Display Interfaces	X	x			x
Conversational Systems	X				
Writing Systems	X	x		x	x

the individual and technology. The service delivery process is not as simple as evaluating, selecting, and implementing. The results of training an individual are of major consequence to the type of technology required and the augmentative communication system ultimately needed. Training skills must be integrated into augmentative communication services.

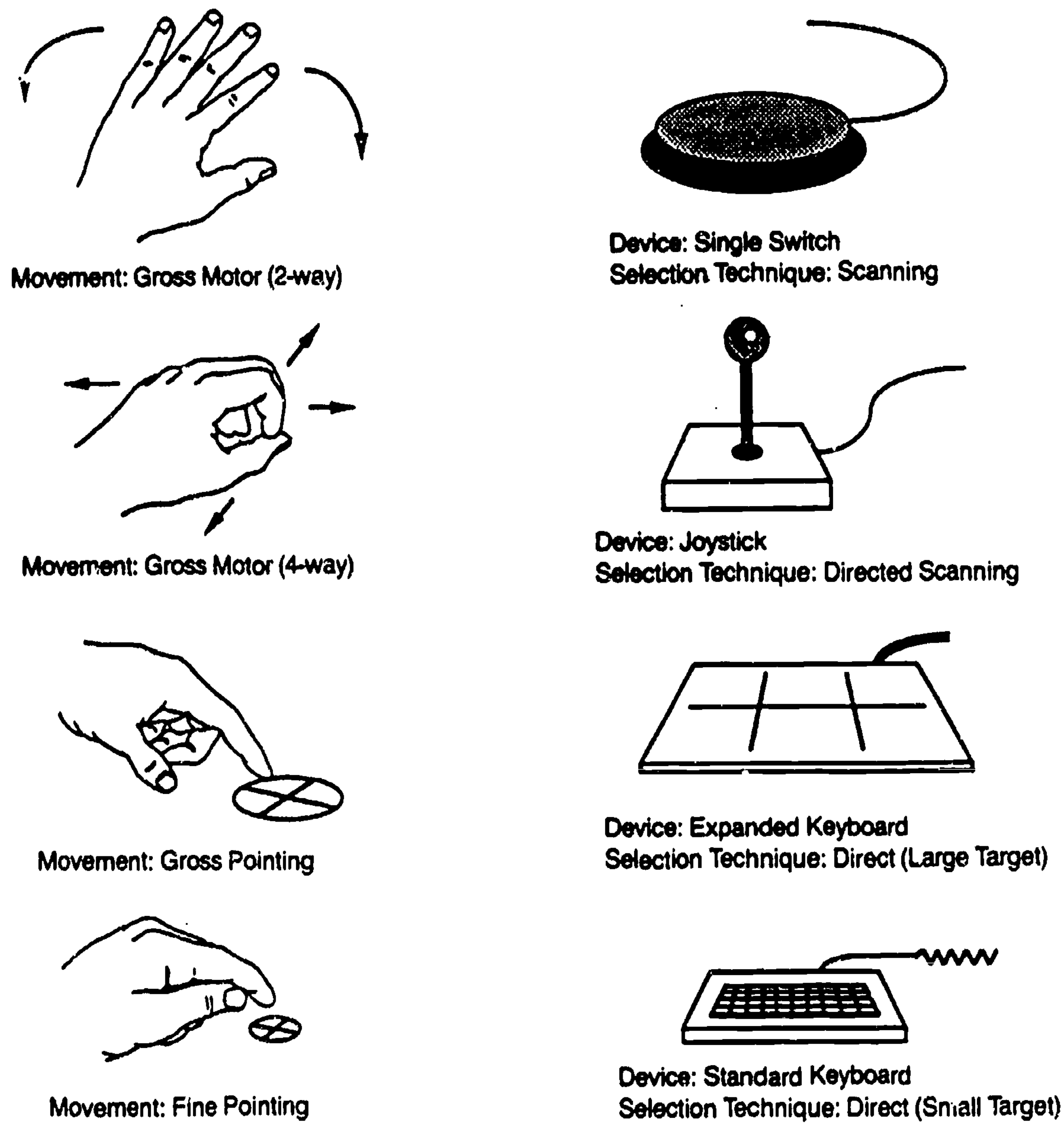
The concept of identifying the proper communication system while concurrently training an individual to advance his abilities is acknowledged informally by most expert clinicians, but very little formal attention has been devoted to this technology-human skill relationship. The Parallel Interventions Model helps to describe the dynamics of matching technology to an individual's needs. It highlights the two parallel tracks (adaptation and training) that an OT must consider. The Parallel Interventions Model also highlights the fact that, as an individual improves his skills, two diametrically opposed outcomes can result relating to how the individual needs technology. As a person's intrinsic skills improve, either he is able to use more powerful communication systems (see Figure 2) or, alternately, he may depend on less and less technology (e.g., diminishing use of a speech synthesizer as vocal speech is acquired). In practice, this is fairly complicated, but the first step in its simplification is acknowledging and understanding the paradigm. In summary, the Parallel Interventions Model contains two postulates:

1. Assistive/rehabilitation technology cannot be implemented without a parallel training track.
2. This training has a profound impact on the type of technology needed. It either increases the sophistication of the technology required or decreases the need for the technology.

The Parallel Interventions Model

The Parallel Interventions Model has significant implications on the role of occupational

Figure 2 Parallel Interventions Model



therapy in augmentative communication. Whereas augmentative communication has frequently been seen as the domain of speech-language pathology, it is clear that speech-language pathologists are not inherently trained to evaluate and provide therapeutic interventions in many of the interface functions such as motor control skills and cognitive-perceptual skills. The occupational therapist plays a critical role in working on the augmentative communication team to maximize an individual's motor skills so he can best access and control an augmentative communication system. Likewise, the occupational therapist has obligations to maximize cognitive-perceptual skills of an individual, specifically to aid in his perception and comprehension of the augmentative communication system. Other training needs include better postural and mobility skills, as well as functional training so that an individual can use the communication systems itself (particularly in the case of writing systems). These are all critical training functions for occupational therapists. Figure 3

Figure 3 Augmentative Communication System Training: Areas of Current OT Involvement

	Screen for Application Training	Evaluate for Treatment Planning	Select Treatment Plan	Train	Re-evaluate
Seating/Positioning	X	X	X	X	X
Mobility	X	x		x	x
Input/Control Interfaces	x	x	x	x	x
Output/Display Interfaces	x	x	x	x	x
Conversational Systems	x				
Writing Systems	x	x	x	x	x

portrays the authors' perceptions of occupational therapists' current involvement in training clients for augmentative communication system use.

The Role of Occupational Therapy

Few occupational therapists would disagree with the concepts described above. Traditionally, however, occupational therapists have not proven to be very helpful on augmentative communication teams. For example, whereas generic neuromuscular control (using technology such as NDT, PNF, SI, etc.) should always be a goal of occupational therapy, augmentative communication therapy requires two additional skills.

First, a therapist must understand augmentative communication technology. Single-switch scanning selection, encoding, directed scanning, and direct selection must be part of the occupational therapist's working vocabulary. The therapist must also be familiar with the hardware and software which might be implemented. What is the difference between strict multi-level branching and semantic compaction software? What is EZ Keys, and how does it differ from the Touch Talker? Second, not only must the occupational therapist understand the technology, but must focus intervention on technology. Effectively operating a single switch may be the only barrier to successful communication for a child. Someone needs to refine the child's motor skills and directly train single-switch operations.

Summary

Occupational therapists must clarify their participation in augmentative communication teams. While occupational therapists may not need to see their role as coordinating an augmentative communication team, although this is possible (Finkley, 1988), the contribution they make in the overall augmentative communication service delivery effort is substantial. Figure 4 recapitulates all of the functions critical to augmentative communication service delivery. This revision updates the role of occupational therapy in augmentative communication service delivery to what the authors believe it ideally to be.

Figure 4 Occupational Therapy Role in Augmentative Communication Services

Technology Application	Screen	Evaluate	Select/ Recommend	Acquire/ Set-up	Follow-up
Seating/Positioning	●	ⓢ	ⓢ	○	ⓢ
Mobility	●	ⓢ	ⓢ	○	ⓢ
Input/Control Interfaces	●	●	●	●	●
Output/Display Interfaces	●	●	●	●	●
Conversational Systems	●	ⓢ	ⓢ	○	ⓢ
Writing Systems	●	ⓢ	ⓢ	○	ⓢ

Training	Screen for Application Training	Evaluate for Treatment Planning	Select Treatment Plan	Train	Re-evaluate
Seating/Positioning	●	ⓢ	ⓢ	ⓢ	ⓢ
Mobility	●	ⓢ	ⓢ	ⓢ	ⓢ
Input/Control Interfaces	●	●	●	●	●
Output/Display Interfaces	●	●	●	●	●
Conversational Systems	●	○	○	○	○
Writing Systems	●	●	●	●	●

ⓢ = Technology Specialist Role ● = Primary Role ○ = Secondary Role

This delineation acknowledges that *all* occupational therapists must serve in primary and secondary roles in augmentative communication service delivery. Additionally, advanced training is essential for occupational therapists to specialize in augmentative communication services.

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Fishman, I. (1987). *Electonic communication aids*. Boston: Little, Brown and Company.

Rodgers, Barry L. (1985, May). *A future perspective on the holistic use of technology for people with disabilities, Version 2.1.* Madison: University of Wisconsin, Trace Research and Development Center. Based on paper presented at the Discovery '84: Technology for Disabled Persons Conference, Chicago, IL.

Institute 8

Roger O. Smith

Computerizing A System for Integrating And Reporting Functional Assessment

In 1985 a team from the University of Wisconsin-Madison set out to develop a theory-based functional assessment paradigm and a new instrument to advance occupational therapy functional assessment. If possible this instrument was to provide a functional outcome measure and to diagnose functional performance deficits for treatment planning. The instrument also needed to integrate the wide variety of functional areas that occupational therapists evaluate (the AOTA's Uniform Terminology, 1989, lists about 90) and allow therapists to collect the data using any reliable, valid evaluation. Furthermore, the tool was targeted to be relevant to all occupational therapists, regardless of the setting in which they worked or the varied populations they treated.

This mission was undoubtedly ambitious. Several techniques new to functional assessment design, however, were developed and incorporated into the instrument. This made it possible to formulate a generic occupational therapy system for collecting, compiling, and reporting functional assessment data. In 1988, an early working version of a System for Integrating and Reporting Occupational Therapy Functional Assessment (SIR-OTFA) was produced.

SIR-OTFA is organized by a hierarchical conceptual model of function. (See Figure 1.) The ability to perform a functional activity is described as dependent on lower level

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abilities. For example, the ability to dress is dependent on a set of skills such as hand function, problem solving, and visual perception skills. These in turn, are dependent on a set of lower level functional components. Hand function is dependent on tactile sensation, range of motion, strength, pain, etc. SIR-OTFA's master hierarchical taxonomy includes 213 items. All 213 functional categories, though, are not needed by every therapist for every patient. To make the process more efficient, SIR-OTFA employs a branching decision tree format. This process adds 42 decision nodes, but allows therapists to bridge over large numbers of functional assessment categories that are irrelevant to a specific patient or setting. For example, a therapist working in mental health is only asked two screening-type questions regarding neuromuscular function. If there is no indication of any deficit in neuromuscular areas, no further questioning in the details of neuromuscular function (such as strength, endurance, reflexes, or range of motion) would follow. On the other hand, if deficits were highlighted through the general screening questions, further detailed inquiry would ensue. Figure 2 provides an example of screening questions and how this decision tree is portrayed. The product of this branching process is a tailored assessment that only addresses the set of functional assessment questions specific to the needs of the person with the disability. The paper and pencil version of SIR-OTFA resembles a self-teaching textbook that asks questions, and depending on the answers, moves the user to the next question, jumps ahead to another part of the textbook for advanced work, or returns to previous materials for remedial instructions.

Figure 1

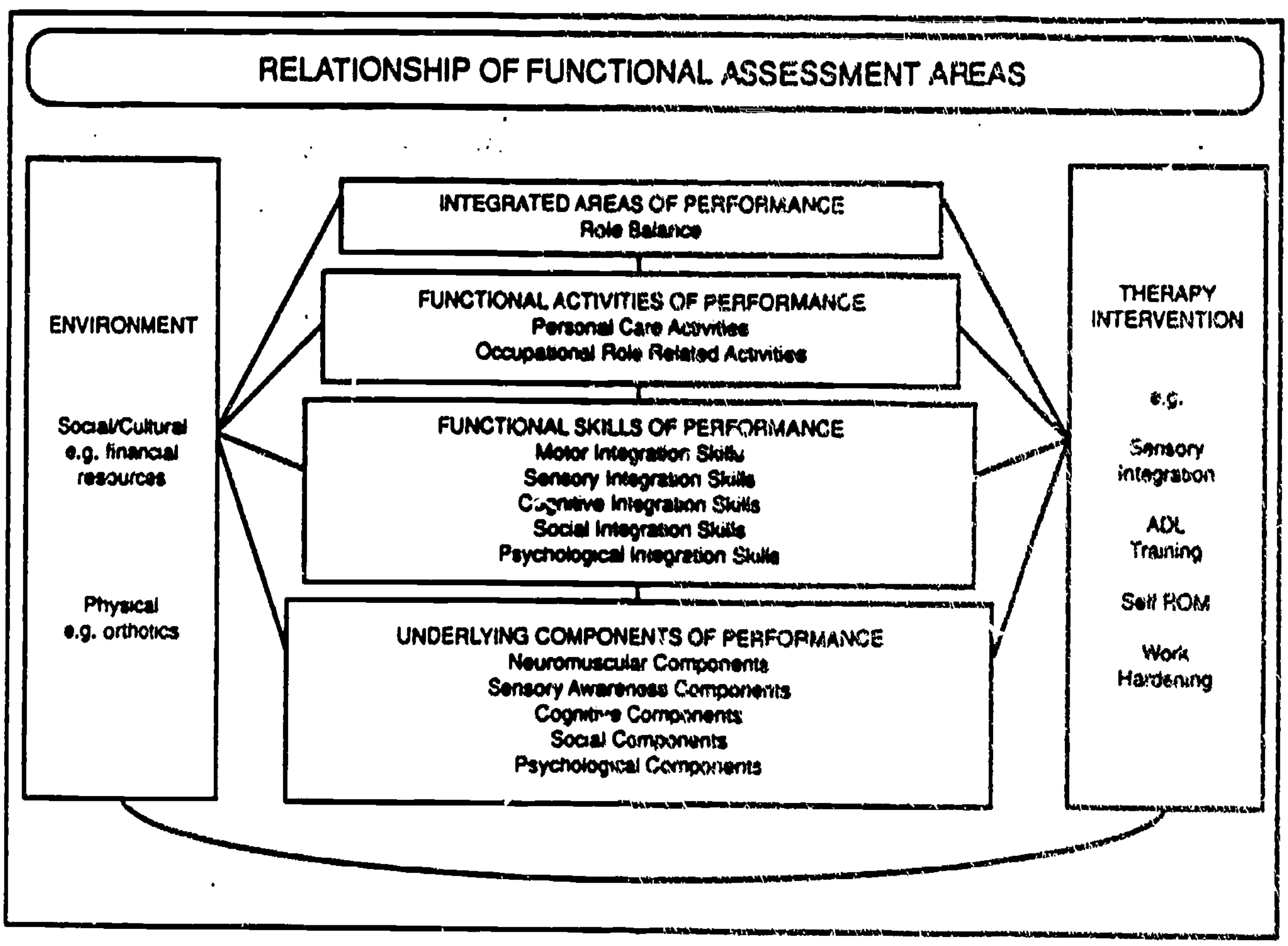

Figure 2

Example Decision Paradigm from SIR-OTFA Scoring Guide

FUNCTIONAL ACTIVITIES OF PERFORMANCE

A. PERSONAL CARE ACTIVITIES

2. Medical and Health Management Activities

a. Medication Routine

Obtains medication; accesses container; takes appropriate quantities, using correct schedule; and exhibits knowledge of side effects and precautions.

No Deficit	2
Partial Deficit	1
Total Deficit	0
Not Applicable	NA
Not Examined	NE

If Score = 1, continue.
If Score < > 1, go to b. Exercise Program/Routine, page 8.

SIR-OTFA also applies a second technique to optimize its efficiency. It incorporates an intuitive scoring method by using a trichotomous scale. This scale requires a therapist to focus on one defined functional area at a time and score performance as "no deficit", "total deficit", or "partial deficit". (See Figure 3 for definitions of these scores.) When this trichotomous scaling is applied in conjunction with the tailored branching system, functional categories have a sensitive range of many points but are easy to score. For the category of dressing, for example, a score can range from 0 to 14. The therapist, however, is never required to make clinical judgements any more complex then the trichotomous (no deficit, partial deficit, or total deficit) response.

Problems with the Paper-and-Pencil SIR-OTFA

Preliminary local and national field testing in 1987 and 1988 highlighted several important administrative problems with SIR-OTFA. While beta test users of SIR-OTFA responded very positively to the system (many requested permission to continue using the early research version), several critical difficulties in using SIR-OTFA were brought to the forefront. Basically, users explained that the procedure of using SIR-OTFA was extremely complex. There were over 100 pages of reading in the manuals and scoring guide. The scoring response sheet was a trifold sheet with 254 items of response. It required therapists to make dozens of mathematical calculations. The consequence of this complexity was that SIR-OTFA was taking therapists three to four hours to complete, and there were numerous errors in the scoring calculations (as many as 50% of the score sheets exhibited errors).

Additionally, the paper-and-pencil design of SIR-OTFA had limited the depth and detail of the system. During the formulation of the taxonomy it was acknowledged that 250 scoring responses was extensive. An extreme amount of page turning was required, and scoring and graphing procedures were already burdensome. Consequently, many of the functional assessment categories were generalized and much of the detail required in certain areas of occupational therapy practice was omitted in favor of a more generic and useable paper-and-pencil SIR-OTFA.

Figure 3

Legal SIR-OTFA Responses and Their Definitions

2 **(No Deficit):** should be selected if the person's performance in the category meets all defined criteria.

1 **(Partial Deficit):** should be selected if the person's performance in the category meets some, but not all of the defined criteria.

0 **(Total Deficit):** should be selected if the person's performance in the category meets none of the defined criteria.

NA **(Not Applicable):** should be used for any category not applicable to the client being assessed. For example, "Employment and Volunteer Preparation Activities" for a 6-year-old-boy would score an NA. Categories are applicable if there is any uncertainty as to their applicability status.

NE **(Not Examined):** should be used when the setting or the particular circumstances prevent assessing the client in that category.

Computerization as a Solution

In 1989, a proof-of-concept computerized SIR-OTFA was developed. Preliminary testing revealed many advantages. First, while the paper-and-pencil version required three to four hours to complete and was prone to mathematical errors, the software version of SIR-OTFA took 20 to 30 minutes and was error-free. Second, the computerized SIR-OTFA immediately generated and displayed summary graphs and totals. Third, computerizing SIR-OTFA removed page turning. Thus, therapists only viewed the functional categories that were appropriate for their individual patients in their setting, and did not need to page around irrelevant questions. Lastly, computerization of SIR-OTFA allows virtually unlimited depth and detail in functional assessment categories. For example, in the paper-and-pencil version of SIR-OTFA, there are only five categories scrutinizing functional performance pertaining to employment or other work-related activities. The software version of SIR-OTFA allows the extension of these categories to better collect data in the area of work evaluation—without adding unnecessary paperwork.

SIR-OTFA: Today and Tomorrow

SIR-OTFA software is being made available to occupational therapists from the American Occupational Therapy Association. It is important to note, however, that while the early version of the paper-and-pencil SIR-OTFA has been tested for preliminary reliability and validity (with encouraging results), extensive further research and development efforts are required for both the paper-and-pencil and computer versions. Additional reliability and validity studies aimed at specific populations and settings are planned, as well as further development of SIR-OTFA categories to fully use the computer potential of functional assessment. An intriguing aspect of SIR-OTFA research and development is the "futuristic" potential of computerized functional assessment. Already on the drawing boards is a software module for computer-assisted report writing and a module to assist therapists in translating the dysfunction profile directly into a treatment planning process.

Acknowledgments

This project is based on initial work supported by a grant from the American Occupational Therapy Foundation.

Robert C. Christiaansen

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Technology Specialization for Occupational Therapists: Techspec Education Model

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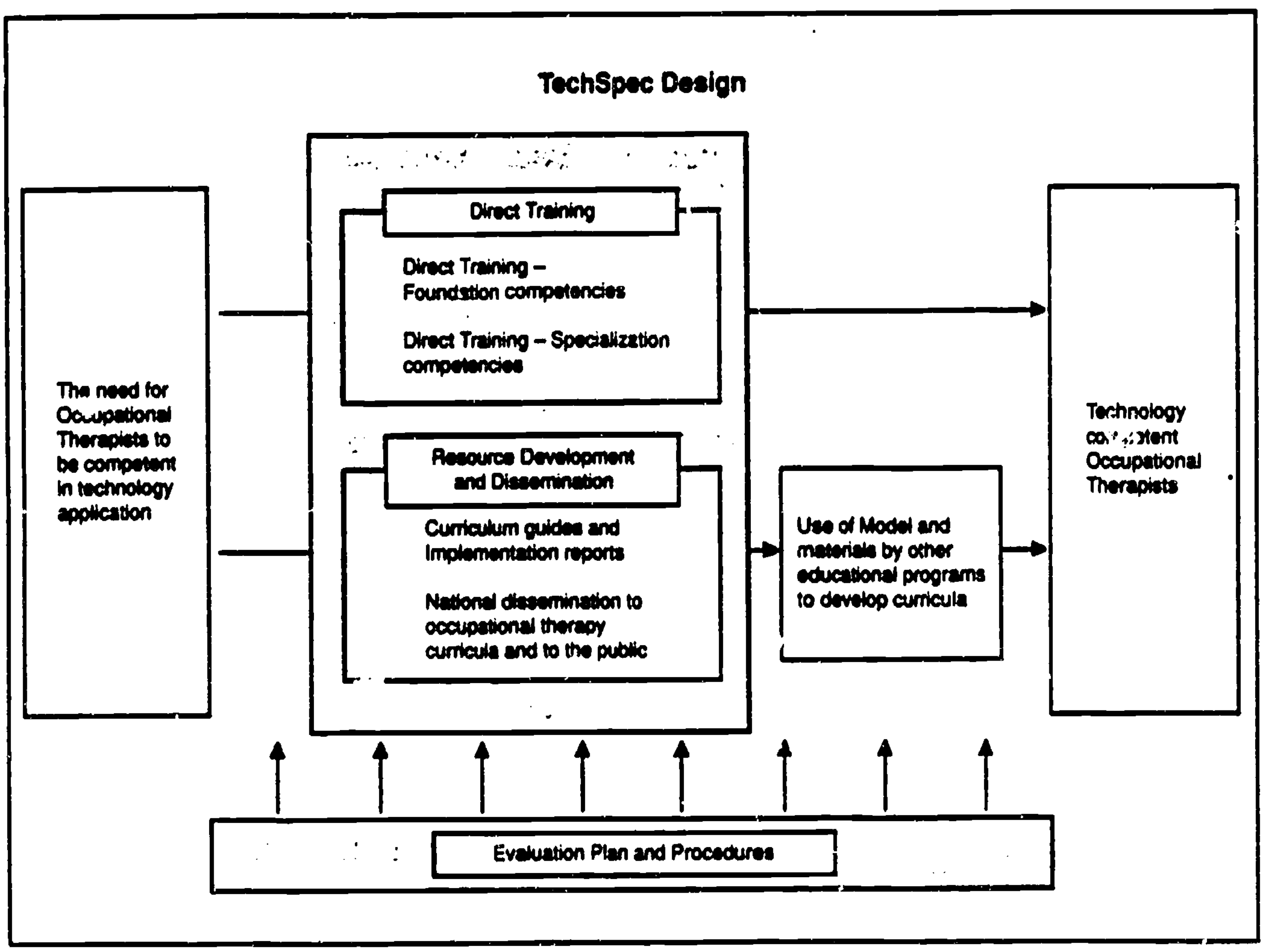
The explosion of technology in rehabilitation and education has demanded a major adjustment in professional training programs. Occupational therapists emerging from their basic professional training are being increasingly required to apply a knowledge base in assistive and rehabilitation technologies. During the early 1980's this educational need became a major concern of the Trace Research and Development Center and the Occupational Therapy Program at the University of Wisconsin-Madison. Review of Madison graduates revealed that they had developed substantial backgrounds in anatomy, physiology, psychosocial functioning, and educational and medical disabilities, but received virtually no preservice experience with newer electronics-based technologies. This was particularly disturbing given that the University of Wisconsin-Madison campus supported several nationally recognized research and development programs in assistive and rehabilitation technologies. Students had no mechanism for tapping these resources—no way of learning about technological advances and their applications.

In the fall of 1988, the Preservice Technology Specialization Program (TechSpec) was started with the support of a grant from the Office of Special Education and Rehabilitation Services, U.S. Department of Education. The primary mission of the TechSpec program is to provide educational opportunities for occupational therapy students in the area of assistive and rehabilitation technologies. The program addresses the need on three levels: locally, within the university, and nationwide.

Figure 1 depicts the program's strategy for meeting the overall educational need. The strategy consists of three components. First, the program provides foundation-level skills for the majority of occupational therapy students coming through the University of Wisconsin-Madison. (The TechSpec model recognizes that while all occupational therapists need some background, not all need to become specialists.) Second, the program serves the need for specialists in technology through a certificate program, where a select group of students obtain a more in-depth knowledge base in applying technology. Third, the program is developing a set of course guides and documentation describing the TechSpec program for other programs across the country that are developing or updating technology curricula. (See Figure 1.)

Eight basic competencies are identified to serve as educational objectives for graduating therapists. The first three are foundation competencies that all occupational therapy graduates should exhibit. (1) Graduates should understand technology in rehabilitation and education. This includes the history, potential, constructs and applications, and limitations. (2) Graduates should be familiar and comfortable with the use of

Figure 1



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technology. (3) Graduates should be aware of resources and how to use them appropriately.

Beyond the three foundation competencies five additional competencies are expected for occupational therapists who are specializing in technology. (1) Graduates should be familiar with a core set of technological systems and their applications. (2) Graduates should be able to assess a person's skill and deficit areas related to technology application. (3) Graduates should be able to match technological applications to an individual's particular skills and deficits to increase their functional level. (4) Graduates should be able to train children and young adults to use appropriate technologies. (5) Graduates should understand and be able to apply the benefits of interdisciplinary teaming.

In addition to the eight educational objectives above, the TechSpec program incorporates six design features to make the program more accessible to students. First, the TechSpec program has an interdisciplinary focus that coordinates a variety of departments, state-of-the-art research centers, clinical facilities, and information dissemination programs representing several disciplines. Second, TechSpec tries to use innovative scheduling for coursework. Third, while the focus of this program is on occupational therapy students, additional students from outside occupational therapy are encouraged to participate. Fourth, both foundation and specialization tracks are viewed as essential for flexible student participation. Fifth, annual enrollment allows students to enter the program with a realistic timeframe for completion. Finally, the curriculum design incorporates a variety of educational media including lectures, readings within course work, laboratory and discussion experiences, independent study, and practicum formats.

The initial two years of the TechSpec program have produced several specific results. In terms of enrollment in the program, student enrollment in foundation and specialization courses exceeded initial projections

Figure 2

Enrollment by Discipline (Year 1)

	OT Srs	OT Jrs	OT Grads	PT	Ind Eng	Spec Educ
Introduction to Rehabilitation Educational Technology	20	20	7	1		
Computer Applications in Occupational Therapy	4	10				
Technology Design for Persons With Disabilities	5	9			13	1
Construction and Adaptation of Persons With Disabilities	15	27				
Practica	10					
TOTALS	54	66	7	1	13	1

by 500%. Figure 2 depicts actual enrollments for the first year. During this time three new courses were developed; revisions were made in two existing courses; and two course guides and several papers/presentations relating to the TechSpec program were written.

Program evaluation activities have shown the initial success of the TechSpec program. Data substantiating its effect include students' subjective assessment of their skills, objective testing of their knowledge development, and comments from the TechSpec Advisory and Evaluation Committee. Figure 3 illustrates results of the self-perception rating scale compared to the number of TechSpec courses taken. The more TechSpec courses taken, the more confident students were with their skills. Figure 4 depicts scores compared between non-TechSpec and TechSpec students. TechSpec students responded with more confidence in their skills than non-TechSpec students. Results from the 25-question multiple choice test showed similar differences. Test scores increased as the number of courses increased and TechSpec students' scores were higher than non-TechSpec students.

At the close of the first year, the project staff met with a panel of experts in technology and education whose purpose was to review and assess the progress of the program. The Advisory and Program Evaluation Panel was composed of individuals from several university departments and units, staff from the State Department of Public Instruction, the American Occupational Therapy Association (AOTA), and individuals from technology research and development centers. Two major items were dominant in the panel's review. The first was that training individuals to become competent technologists is extremely difficult and requires a long-term process. Second, the panel highlighted that students not only need to be able to exhibit appropriate knowledge about technologies, but they also need to understand how to apply them. The panel encouraged more

Figure 3 Comparison of Student Self-Perception: by Number of Courses Taken

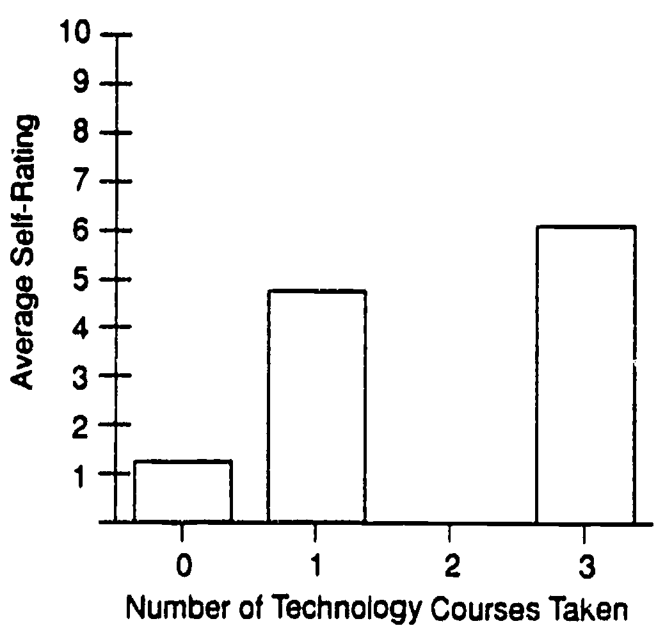
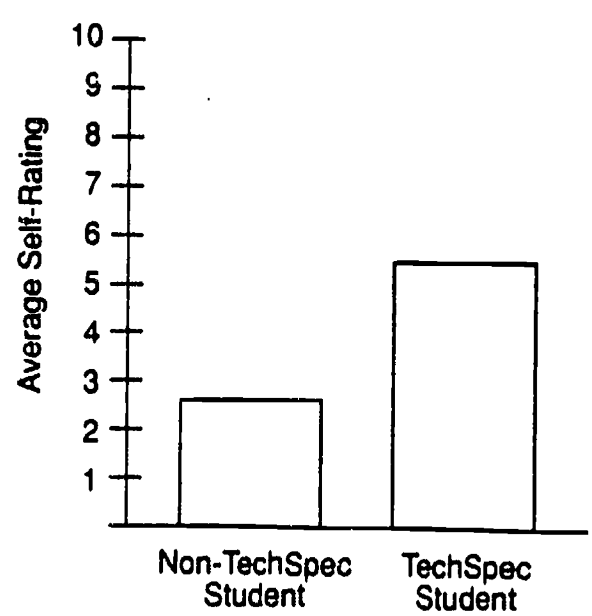


Figure 4 Comparison of Student Self-Perception: TechSpec versus non-TechSpec Students



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attention to the process of technology application and less emphasis on the technology itself.

The first two years of the TechSpec program have been acknowledged by students, program staff, and the advisory panel as a success. For the future, TechSpec will continue to aim for the best technology education possible for its students and share its experiences with interested others.

Acknowledgments

This paper is supported in part by the Office of Special Education and Rehabilitation, U.S. Department of Education, grant #H029F80083-89.

Scientific/
Technical Session
313-A

Marian
Hall

Gregg C.
Vander-
heiden

Hyper-ABLEDATA: An Overview

ABLEDATA is a database with information on products that are useful to persons with disabilities. It is produced and maintained by the Adaptive Equipment Center at Newington Children's Hospital in Newington, Connecticut, and is funded by the National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education. Through a cooperative effort, the Trace Center at the University of Wisconsin-Madison has developed a microcomputer format for the database called Hyper-ABLEDATA.

ABLEDATA includes all types of rehabilitation or assistive technology products. The database format and terminology are expanded to include any changes as new types of products become available. The major categories of products included in ABLEDATA are: *Personal Care, Home Management, Vocational Management, Educational Management, Mobility, Seating, Transportation, Communication, Recreation, Ambulation, Sensory Disabilities, Orthotics, Prosthetics, Therapeutic Aids, Architectural Elements, Computers*, and *Controls*. There are more than 17,000 individual products listed, from over 2,200 companies. Products listed include commercial products and do-it-yourself products and ideas.

Each product listed in ABLEDATA includes the following:

Generic Name: Common name for the product or type of product.

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Gregg C. Vanderheiden, PhD, is Director, Trace Research and Development Center, Madison, Wisconsin.

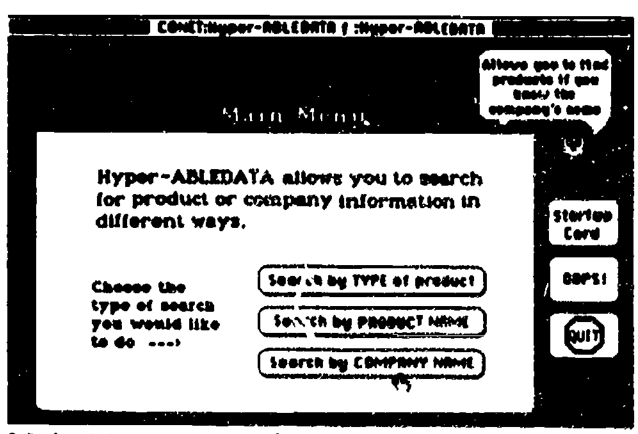
Brand Name:	Manufacturer's name for a product.
Manufacturer:	Name, address, and phone of the manufacturer.
Code Number:	Reference number assigned to the manufacturer.
Availability:	Indicates when product is available from the manufacturer or from local vendors.
Cost:	Cost of the product, including month and year of the price list.
Description:	Brief description of the product.
Identifiers:	Controlled vocabulary from the ABLEDATA Thesaurus.
Comments:	Subjective information about the product, usually from sources other than the manufacturer's literature.
Evaluation:	Product evaluation information with reference to original source. Evaluation data is not available for every product.

ABLEDATA was available for many years only through BRS Information Technologies, a public database vendor that provides access to public databases through a subscription service. The advent of HyperCard has radically changed the method of access to ABLEDATA. The Trace Center at the University of Wisconsin-Madison designed a HyperCard program for the Macintosh computers that provides desktop access to the entire ABLEDATA database. The Macintosh version of ABLEDATA is called Hyper-ABLEDATA.

Hyper-ABLEDATA is available for any organization, individual, or facility to install in its own office, for unlimited use, with no hourly charges. Hyper-ABLEDATA is presently available only for Macintosh computers, with the requirement of at least 1 megabyte of RAM and either 20M of hard disk storage (for Hyper-ABLEDATA without pictures or sound samples), 40M of hard disk storage or a CD player (for Hyper-ABLEDATA with pictures and sound samples). Other versions will be available in the future for IBM-compatible computers. The initial cost of setting up a system may be high if the organization must purchase a Macintosh computer, but the long-term costs are much lower because there are no hourly charges.

Even more significant than its availability "on desktop" is the format of the information within Hyper-ABLEDATA. The Hypercard format provides on-screen "buttons" designed for specific retrieval functions and the searcher clicks the mouse on the buttons to select operations. There are three options for initiating a search in Hyper-ABLEDATA: Search by Company Name, Search by Product Name, which is the brand name of the product, and Search by Type of Product as listed in the ABLEDATA Thesaurus outline. (See Figure 1.)

Figure 1



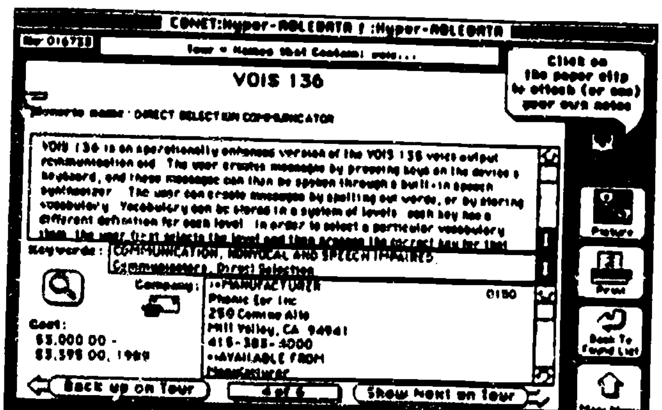
Main Menu screen for Hyper-ABLEDATA.

Hyper-ABLEDATA provides the ability to jump from virtually any point in the program to any other point, and to easily return to the original point of departure. Also, any word can be searched in the Thesaurus outline (Function Outline), with all the occurrences showing on the screen. By clicking on any of the lines the computer will move to that place in the outline.

Special Features

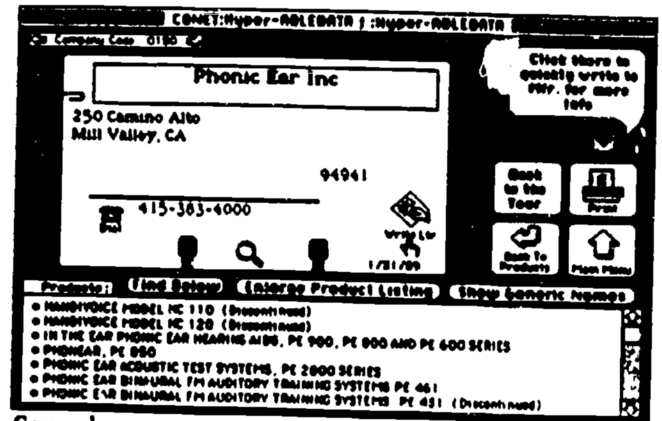
Hyper-ABLEDATA provides several special features on the company cards and the product entry cards that are not available on the BRS version of the database. (See Figures 2 and 3.) One is the availability of enlarging the print on the screen for persons with low vision. There is a small magnifying glass icon on each screen. By clicking on the icon the print enlarges and becomes boldface in two steps, and clicking a third time returns to normal size print. There are 500 sample photographs of products in the database. These are viewed by clicking on the picture button. There are also some sound samples for products where sound quality is critical to product selection (i.e., voice synthesizers, artificial larynxes). Both the pictures and the sound samples have been provided as prototype features on the current version of Hyper-ABLEDATA, but it is anticipated that more will be collected and incorporated in the future as funding is available.

Figure 2



Sample product entry card from Hyper-ABLEDATA.

Figure 3



Sample company card from Hyper-ABLEDATA.

Users are able to attach their own notes to product entries or company cards. In this way they can customize the database for their own needs, and when the database is updated the user notes reattach to the same entries in the new version of the database. The searchable notes can be used for listing local information like vendors of a product, or users in the area that are willing to share their experiences with a product.

Hyper-ABLEDATA is extremely simple to use, and it has all the required instructions to use it right on the screens. At the beginning there are basic instructions on how to use the various features, and most of the buttons have self-explanatory names. For further assistance there is a Help note on each screen. The Help note displays information as each button is touched with the mouse pointer, and even more information is available by clicking on the Help buttons. The instructions at the beginning also explain several advanced features including how to use Boolean commands that allow more refined searches. The Boolean commands can be used to further limit a particular search or to limit a search of the whole database for products with specific features.

As flexible as Hyper-ABLEDATA is, however, it does have some limitations. Although it is possible to increase the size of the characters on the screen for persons with low vision, access to Hyper-ABLEDATA by persons who are totally blind is impossible because of the reliance on the mouse and pull-down menus to access the system. Use by persons who have motor impairments is also greatly restricted by the dependence on the mouse. Future versions of Hyper-ABLEDATA are being planned to alleviate these problems, as well as providing a version for IBM and compatible computers.

Requests for copies of Hyper-ABLEDATA should be made to the Trace Center, University of Wisconsin-Madison, S-151 Waisman Center, 1500 Highland Avenue, Madison, WI 53705-2280, 608-262-6966. For information on BRS subscriptions, please call or write BRS Information Technologies, 1200 Route 7, Latham, NY 12110, 518-783-1161 or 800-345-4277.

For occasional users of the database, or persons without direct access, the Adaptive Equipment Center at Newington Children's Hospital has information specialists available to provide searches. Anyone may call or write to have searches completed for them for a nominal fee. The ABLEDATA staff is also available to provide assistance to persons having questions related to techniques or problems of searching the database either through BRS or with Hyper-ABLEDATA. The information specialists are available at the Adaptive Equipment Center, Newington Children's Hospital, 181 East Cedar Street, Newington, CT 06111, 800-344-5405 or 203-667-5405 (CT), voice or TDD from 8:30 to 5:00 Eastern time Monday through Friday.

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Partial funding for this work was provided under Grant #'s G008300045, H133E80021 and from the National Institute of Disability and Rehabilitation Research, United States Department of Education.